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*Dr T Balasubramanian*

*Publisher*

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## *From Editor's desk*



Dear Readers,

While thanking you all for the tremendous response and enthusiasm shown (without which a journal may not be complete) in shaping this Journal “Otolaryngology online”, may I take the liberty to request you to continue the same interest in the days to come so that it goes a long way for the healthy trend of sharing and disseminating the technical and clinical knowledge in the field of Otorhinolaryngology .

Let me further reinstate that majority of intriguing and challenging situations do occur in nonetheless hidden or the privileged society of the globe. These incidents even though should be shared so far is left in the dark for many practical reasons.

I really thank the online open system of publishing technology and also Prof. T. Balasubramanian, now working as the Professor and Head of the Department of ENT & Head and Neck Surgery, Government Stanley Medical College, Chennai for the hard work and open heart in publishing this as a free online Journal for the benefit of needy as well as for complete understanding of disease prevalence and various types of managements practiced in different situation and changing scenario.

This journal can be utilized in the same manner as any other journal for that matter. Getting familiar with the guidelines given and following them will facilitate a long way in the smooth upkeep of this journal. I thank you for adhering to the guidelines without omission. Interesting case studies, projects etc, in addition to the case reports will be published regularly. Hence this will be of great use even to the epidemiologists as well as research workers. Reporting of cases will become a regular affair as it cost nothing. With New Year 2012 fast approaching I wish you all successful practice and courageous

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reporting of cases in addition to the successful practice.  
With warm regards

U. Venkatesan

### About this Issue

Dear Otolaryngologists,

In this issue we have covered some distance.

The article on “Rhinosporidiosis” is an excellent example of vast experience in a tropical situation. As indicated many areas need to be explored and answered.

Super-nummery tooth, that too in the nasal cavity are sporadically reported, but they seek medical help only if it gives pain or other symptom complex arise. Complications are limited and can be managed easily.

Bi-coronal flap is an effective procedure with limited complication. Author has nicely demonstrated the usefulness and the methodology.

Lingual thyroid is mostly asymptomatic or otherwise not thought of. It mimics lingual tonsillitis or presents as vallecular cyst or neoplasm's of base of tongue. Thyroid uptake studies and ultrasonograms are useful tools if facilities are available before taking up surgery. Thyroid function tests should be mandatory pre and post –operatively.

Fat graft myringoplasty is indeed has a definite role even in the modern age especially for minimal perforations of the tympanic membrane with controlled middle ear infection (inactive stage).

Of course mandibular swing technique has been explained elaborately which will attract more attention.

With best wishes

U. Venkatesan



## Lingual Thyroid Our experience

(Dr. Karthikeyan Arjunan Dr.T.Balasubramanian Dr.N.Seethalakshmi).

### *Abstract:*

*Lingual thyroid is an uncommon congenital disorder of thyroid gland development, resulting in a lack of descend of the gland from foramen caecum to its normal prelaryngeal location. In this paper we discuss a series of cases of ectopic thyroid gland its incidence, clinical presentation, sex ratio, age group, endocrine status, radiological features and appropriate surgical approaches.*

### *Introduction:*

*Lingual thyroid is a rare developmental disorder caused due to aberrant embryogenesis during the descent of thyroid gland to the neck. Lingual thyroid is the most frequent ectopic location of thyroid gland. Prevalence rates of lingual thyroid is about 1 in 1,00,000 to 1 in 3,00,000. Managing this condition is filled with historical controversies ranging from leaving it alone to surgical removal of the lesion.*

### *Patients and methods:*

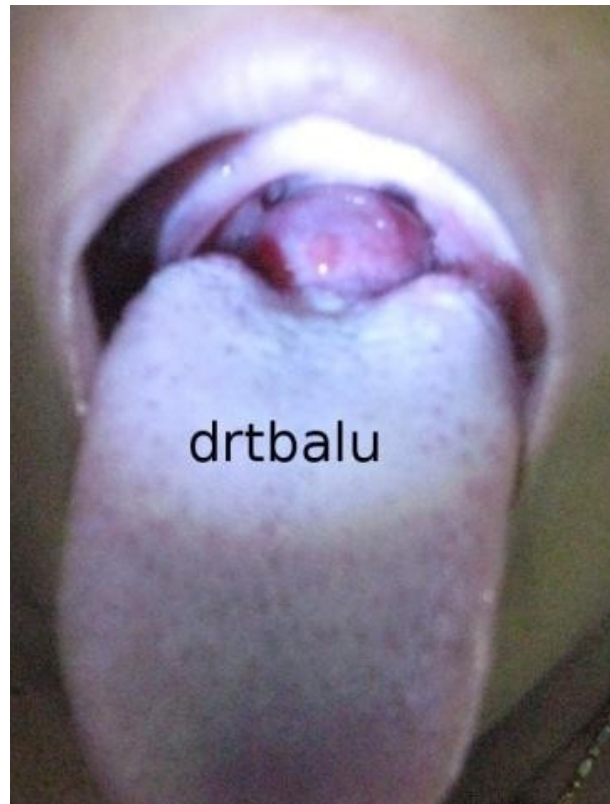
*A study was conducted in stanley medical college, chennai from the year 2009 october to 2011 october. In the 3 years period we had 7 cases of lingual thyroid. Their presentation, sex ratio, age group, clinical features, endocrine status, radiological features, treatment modalities are*

*discussed here. 3 out of 7 case presented with dysphagia. 2 cases presented with dysphonia. one case presented with bleeding through the mouth. Whereas the presenting symptom of other case was quit different. she complained of swelling in the tongue. she did not express any local symptoms. But she had generalised symptoms like tiredness, and loss of appetite inspite she had recent weight gain.*

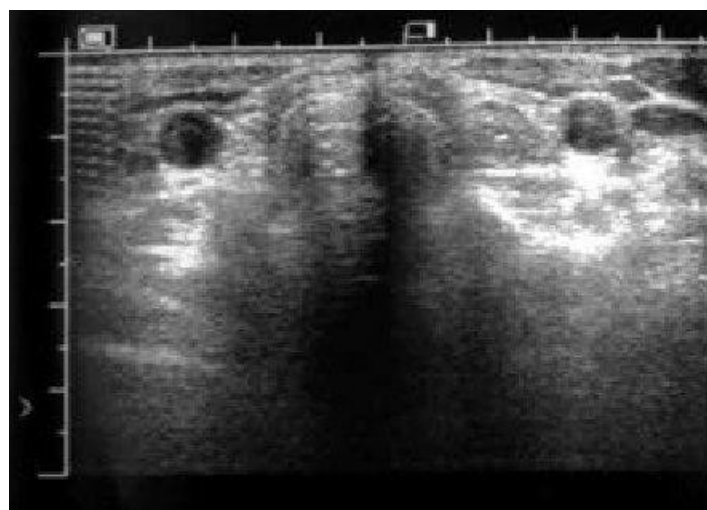
*The highlighting thing we saw in our study is all cases were females.<sup>1</sup> Previous study reports stated that gender ratio as 4:1 to 7:1.1 But we did not have even one male case in this 3 years period. And the interesting thing is all females were between 10 to 35 in whom where there is extra demand of thyroxin by the body which causes it to undergo physiological enlargement.*

*On examination a mass covered with pinkish mucosa seen in the posterior 1/3 of tongue just posterior to the circumvallate papillae. The mass was solid firm in consistency not mobile in any planes. We did not find thyroid by palpation in any of our cases.<sup>6,12,13</sup> Videolaryngoscopic examination done for all cases to predict the lower extent of the mass.*

*It varies from dorsum of the tongue to vallecula. In one case lower border seen by depressing the tongue with tongue depressor.*



*Clinical Photograph of lingal thyroid*

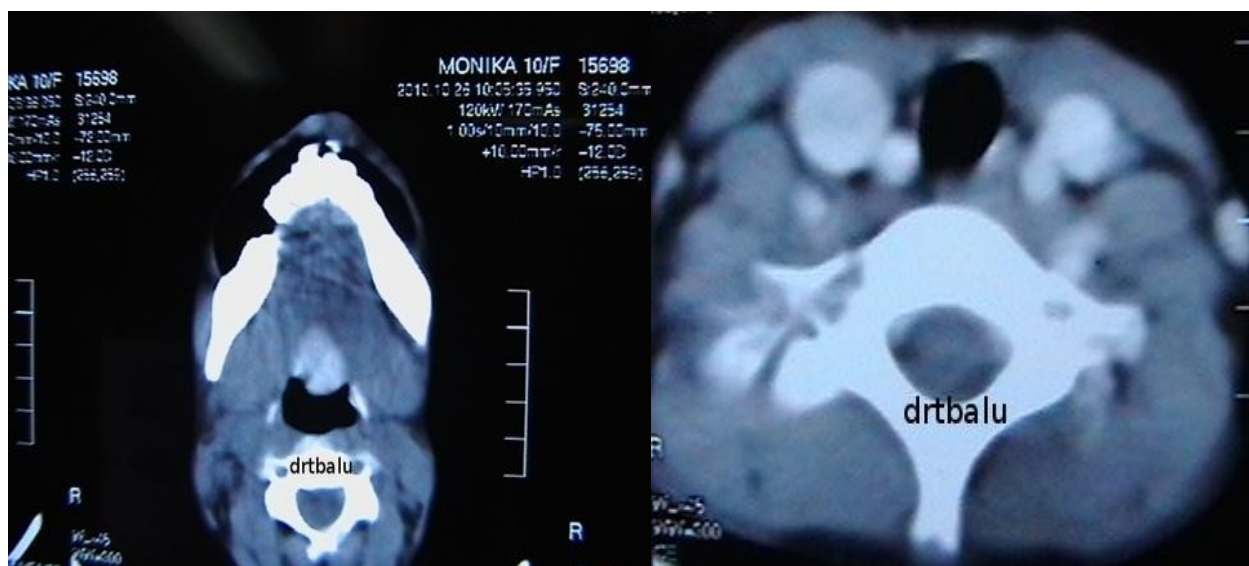


*Ultrasound neck showing lingual thyroid with absent thyroid in th neck*

*This report covers 7 cases that were admitted to Stanley Medical College for treatment.*



*X-ray soft tissue neck lateral view showing soft tissue shadow in the submental region ? Lingual thyroid*



*CT Scan taken for all patients for the following*

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*purposes.:*

- 1.For the accurate assesment of extent of the mass lesion.*
- 2.Vascularity of the mass (with contrast CT ).*
- 3.To rule out the normal thyroid gland in the neck.*

*Regarding endocrine status,<sup>2,3</sup> 4 out of 7 patients were euthyroid whereas 3 were hypothyroid. In those patients suppressing doses of thyroxin was started immediately as by the endocrinologist advice. We did not advise FNAC for any patients to avoid unnecessary bleeding. Similarly instead of biopsying the lesion total excision was planned.*

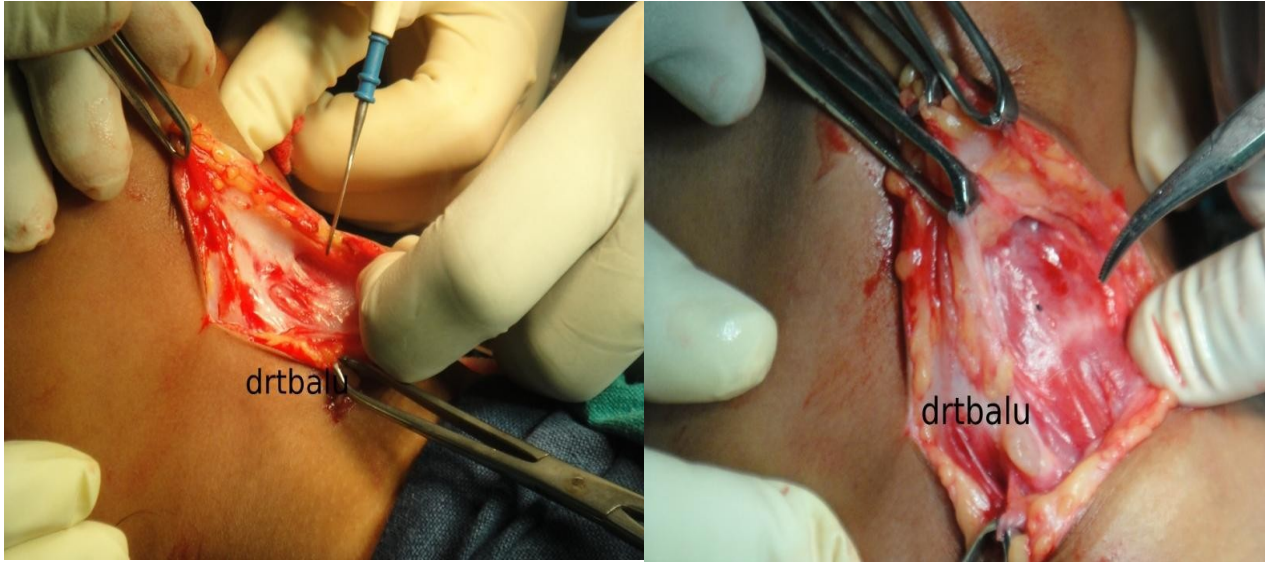
*As mentioned earlier in one of our case posterior extent of the mass was visualised by depressing the tongue with tongue depressor. For that case transoral<sup>7</sup> excision was planned. Surgery was performed under general anaesthesia. Nasotracheal intubation was done as requested by us. This is to avoid troublesome bleeding following intubation trauma. Patient was placed in Rose's position. Boyles Davis mouth gag was used to hold the mouth open. Throat was packed tightly using ribbon gauze to avoid spillage into larynx. The mass was held with a tenaculum forceps and was pulled anteriorly. The anterior border was incised using diathermy cautery. The tumor was gently dissected and stripped away from the lingual tissue. Perfect hemostasis was secured by coagulating the bleeding points seen in the base of the tumor. In rest of the cases lower border could not be visualised by depressing the tongue with tongue depressor. Only visualised by videolaryngoscopy and computerised tomography. In those cases suprahyoid<sup>7,21</sup> approach was decided .*



*Patient is seen being positioned and infiltrated*

*Incision:*

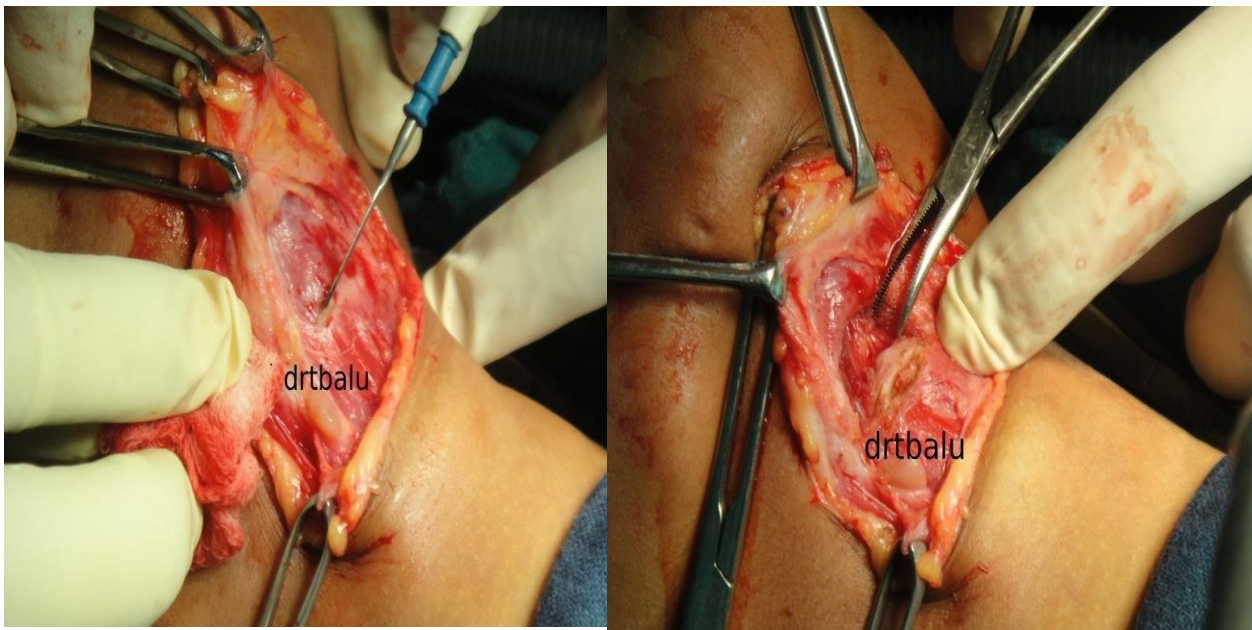
*Transverse skin crease incision was made at the level of hyoid bone. Skin, subcutaneous tissue and cervical fascia are elevated in the subplatysmal plane. Sticking on to the subplatysmal plane helps in preserving the cervical branches of facial nerve. Dissection in this plane is continued and the flap is raised above the level of hyoid bone.*



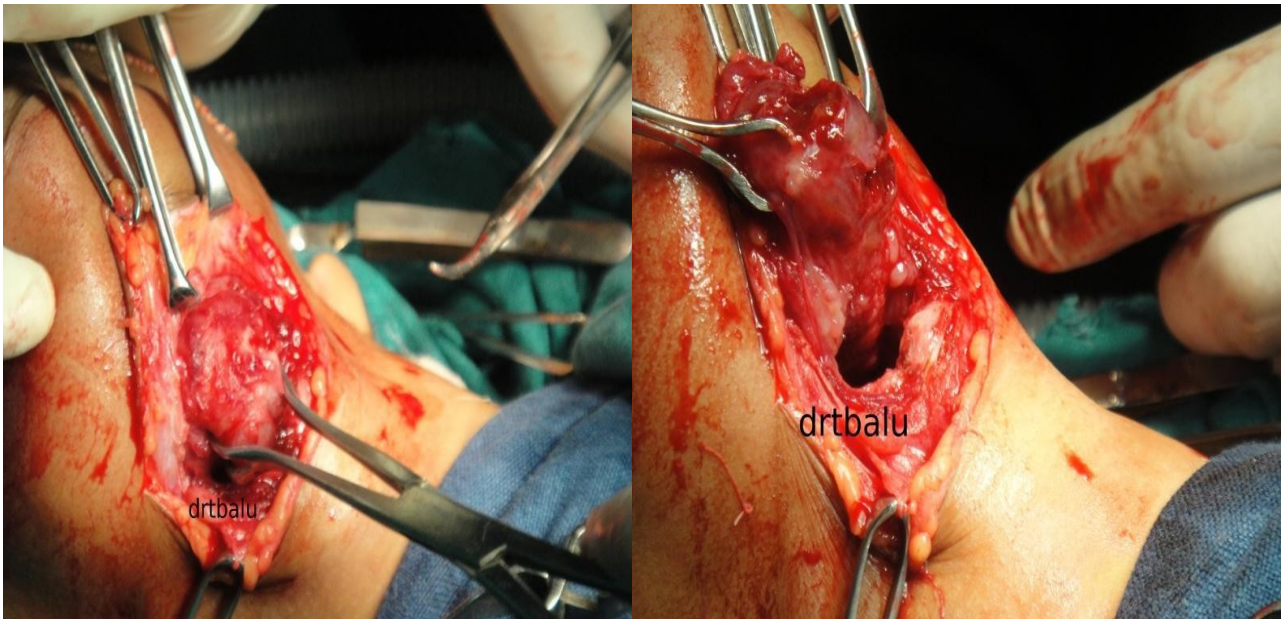
*Figure showing the neck incision and exposure of hyoid bone*

*Supra hyoid dissection:*

*In this stage the muscles attached to the hyoid bone were cut and dissected subperiosteally.*



*Figure showing suprahyoid muscles being freed using a cutting diathermy*



*Supra hyoid muscles were split and the oral cavity was entered. Using a finger guide inside the oral cavity the mass was pushed downwards and delivered via the suprahyoid neck incision. The mass was removed in full.*

*The wound should be meticulously closed in layers.*

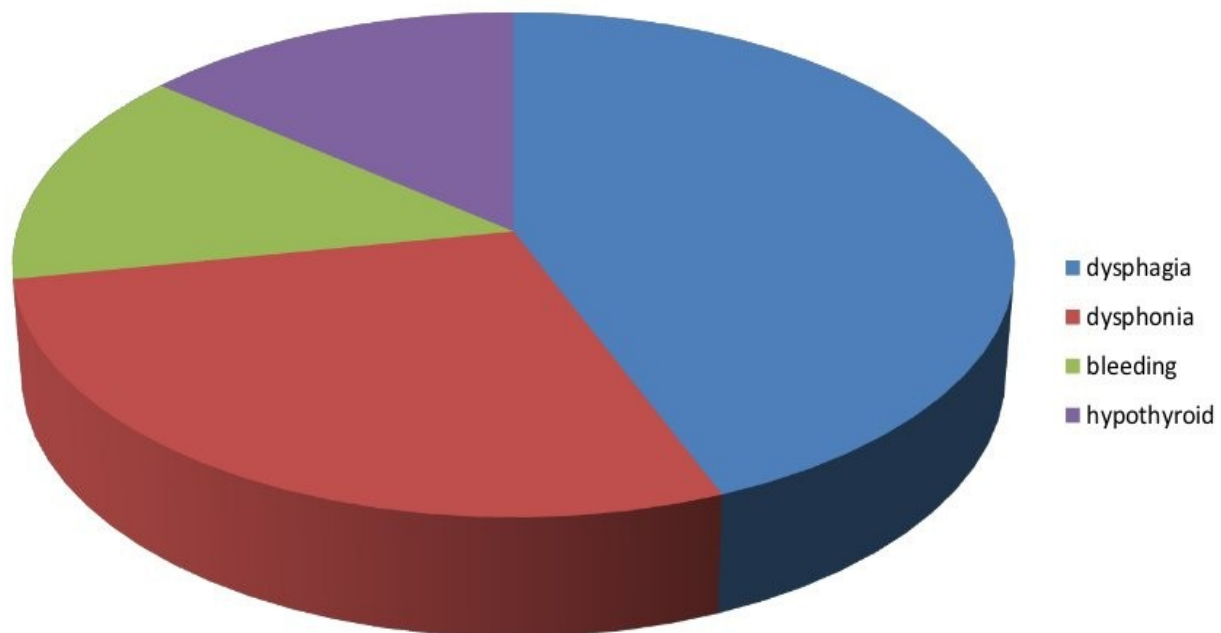




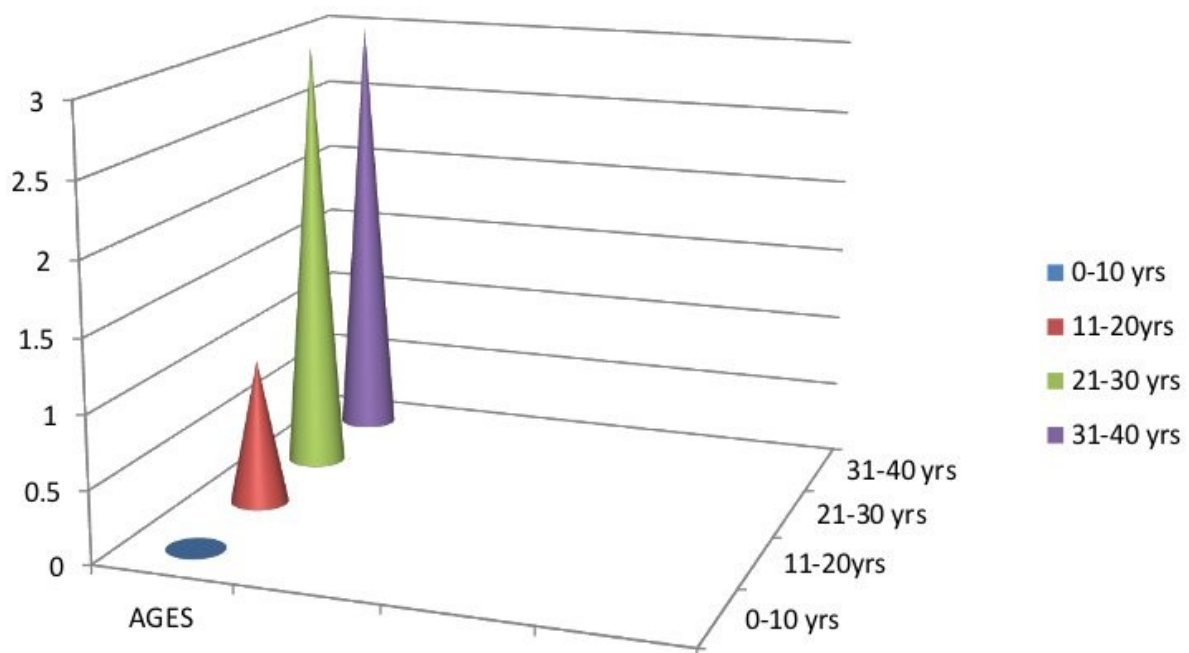
*Ryles tube should be inserted to facilitate early feeding. Ideally the Ryles tube should be left in place at least for 3 days. Lingual thyroid attached to the base of tongue After surgery all these patients should be started on oral supplemental doses of thyroxine.*

*Case details an overview*

	Case1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Presentation	Dysphagia	Dysphagia	Dysphagia	Dysphonia	Dysphonia	Oral bleeding	Hypothyroidism
Gender	F	F	F	F	F	F	F
Age	33	27	30	26	35	11	33
Endocrine status	Euthyroid	Hypothyroid	Hypothyroid	Euthyroid	Euthyroid	Hypothyroid	Hypothyroid
USG Neck	Normal thyroid absent	Normal thyroid absent	Normal thyroid absent	Normal thyroid absent	Normal thyroid absent	Normal thyroid absent	Normal thyroid absent
Approach	Suprahyoid	Suprahyoid	Suprahyoid	Suprahyoid	Suprahyoid	Transoral	Suprahyoid



*Patient presentation represented graphically*



Graphical representation of age distribution

#### Discussion:

Lingual thyroid is a rare developmental disorder of thyroid gland during its passage from the floor of the primitive foregut to its final pretracheal position. Prevalence<sup>1,11</sup> ranges from 1 in 1,00,000 to 1 in 3,00,000. However, in autopsy studies<sup>1,17</sup>, the prevalence ranges from 7-10%. In 70- 90% of cases it is the only thyroid tissue present. It is predominant in females<sup>1</sup>, especially population of Asian origin.<sup>18</sup> Sex ratio between 4:1 to 7:1. Eventhough it may manifest in any age it is commonly seen in younger ages. Most cases are asymptomatic.<sup>2,3,11</sup> Symptomatic cases<sup>2,3,11,18</sup> present with dysphagia, dysphonia, bleeding<sup>14</sup>, snoring, sleep apnea<sup>7</sup> and respiratory obstruction.<sup>9</sup> Rarely patients present with hypothyroid features.<sup>12</sup> In most of the patients normal thyroid tissue is absent. But rarely some patients present with normal thyroid gland. Very rarely second ectopic tissue<sup>20,21</sup> also presents in some patients. Most cases are euthyroid.<sup>2</sup> Some cases are hypothyroid.<sup>2</sup> Hyperthyroidism<sup>19</sup> is extremely rare and only two cases have been reported in the literature. Primary thyroid carcinomas<sup>10,22</sup> arising from ectopic thyroid tissue are uncommon and have been reported. Such malignancies are usually diagnosed only after surgical excision of the lesion.<sup>22</sup> Surgical treatment depends on posterior extent of the mass. If posterior extension of the mass seen on depressing the tongue, the best surgical approach is transoral.<sup>7</sup> Since it does not affect deeper structures; thus, complications, such as lingual nerve injury and deep cervical infections are avoided.<sup>7</sup> Otherwise suprahyoid approach is chosen for better exposure and control of bleeding.<sup>7,21</sup>

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# *Rhinosporidiosis our experience*

*Dr T Balasubramanian Dr R Geetha*

## *Abstract:*

*This article discusses the personal experience of author in the management of rhinosporidiosis. Living in an endemic area of disease the author had the privilege of managing about 200 cases of rhinosporidiosis during 2005 to 2010. Commonest area of involvement happened to be nasal cavity. Inside the nasal cavity rhinosporidiosis was commonly seen arising from inferior meatus. All these patients gave history of bathing in ponds which could account for the common etiopathogenic factor. All the cases were managed by surgical resection followed by 9 months course of T Dapsone to minimize risk of recurrence. Despite these measures the author had a recurrence rate of about 19%. Imaging really provided a road map as majority of these lesions were removed endoscopically.*

## *Introduction:*

*Rhinosporidiosis has been defined <sup>(1)</sup> as a chronic granulomatous disease characterised by production of polyps and other manifestations of hyperplasia of nasal mucosa. The etiological agent is Rhinosporidium seeberi.*

*Rhinosporidium seeberi: was initially believed to be a sporozoan, but it is now considered to be a fungus and has been provisionally placed under the family Olpidiaceae, order chrtridiales of phycomyetes by Ashworth. More recent classification puts it under DRIP'S clade <sup>(2)</sup>. Even after extensive studies there is no consensus on where Rhinosporidium must be placed in the Taxonomic classification. It has not been possible to demonstrate fungal proteins in Rhinosporidium even after performing sensitive tests like Polymerase chain reactions.*

*History: It has been known for over 100 years since it was first discovered in Argentina. <sup>(4)</sup>*

*. 1892 - Malbran observed the organism in nasal polyp <sup>(3)</sup>*

- 1900 - Seeber described the organism <sup>(3)</sup>*

- 1903 - O'Kineley described its histology*

- 1905 - Minchin & Fantham studied O'Kineley's tissue and named the organism as*

### *Rhinosporidium Kinealyi*

- 1913 - ZSchokke reported similar organism in horses and named it *Rhinosporidium equi*
- 1923 - Ashworth described its life cycle <sup>(4)</sup>
- 1924 - Forsyth described skin lesion
- 1924 - Thirumoorthy reported the first female patient <sup>(4)</sup>
- 1936 - Cefferi established the identity of *R. Seeberi* and *R. Equi*
- 1953 - Demellow described the mode of its transmission

### *Incidence and Geographical distribution:*

*Of all the reported cases 95 % were from India and Srilanka <sup>(4)</sup>. An all India survey conducted in 1957 revealed that this disease is unknown in states of Jammu & Kashmir, Himachal pradesh, Punjab, Haryana, and North Eastern states of India. In the state of TamilNadu 4 endemic areas have been identified in the survey, (Madurai, Ramnad, Rajapalayam, and Sivaganga). The common denominator in these areas is the habit of people taking bath in common ponds.*

### *Aim of the study:*

- 1. To identify the disease load in endemic area (Kanyakumari district Tamilnadu)*
- 2. Sex ratio*
- 3. Common areas of involvement*
- 4. Role of bathing in common pond (Etiopathogenesis)*
- 5. Role of imaging in the diagnosis*
- 6. Optimal management modality*
- 7. Role of T Dapsone in preventing recurrence*

### *Inclusion critetia:*

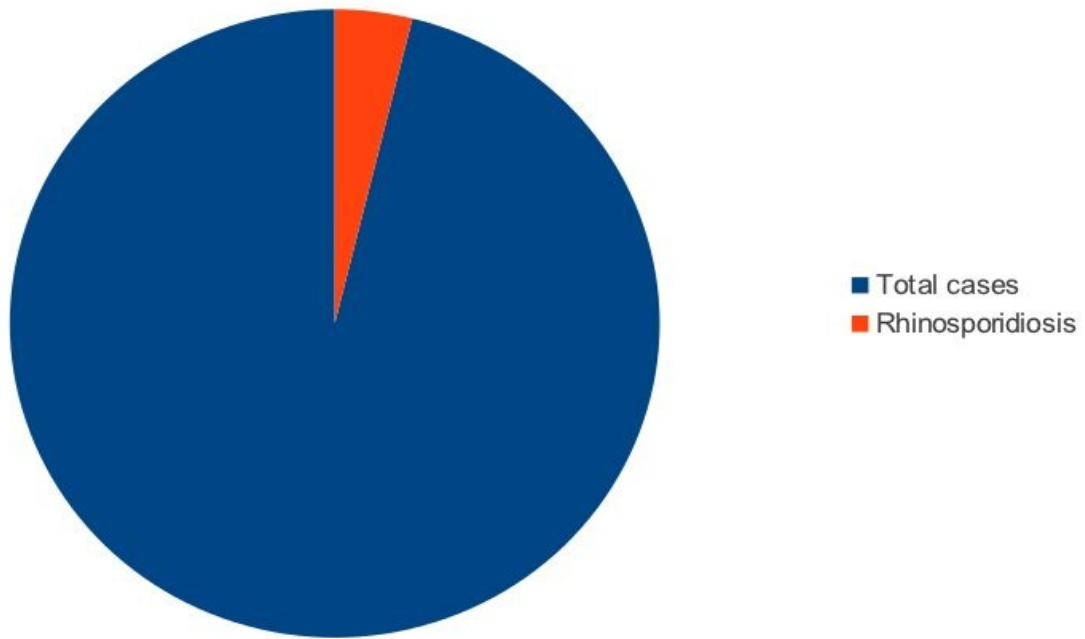
*All patients with rhinosporidiosis were included in this study.*

### *Results:*

#### *Disease load:*

*Rhinosporidiosis constituted about 4% of all cases. <sup>(6)</sup>*



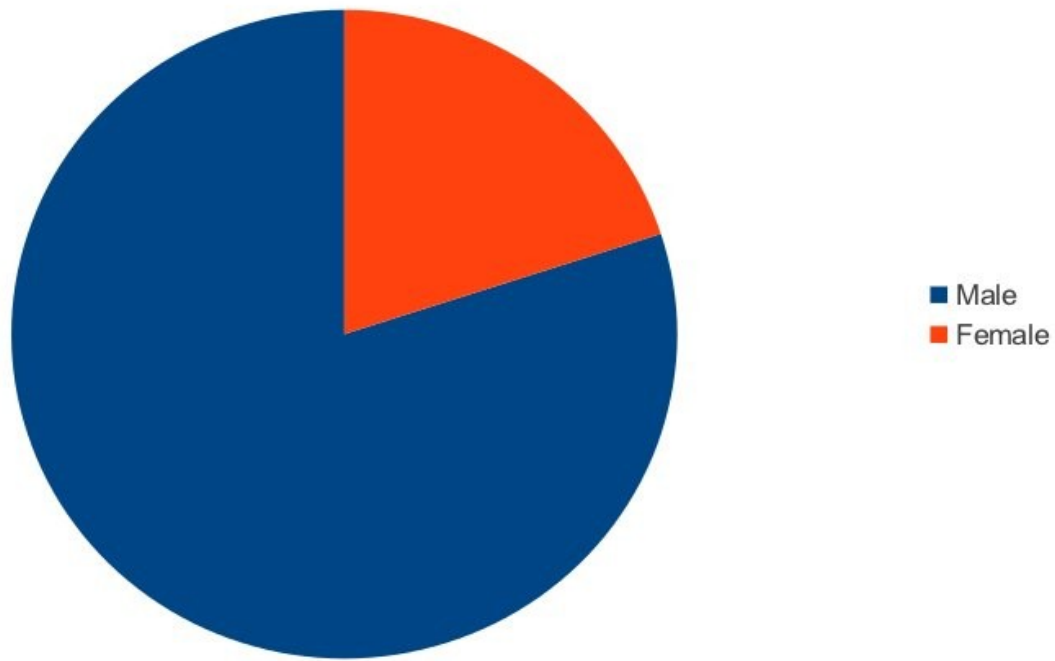


*Chart showing incidence of Rhinosporidiosis*

*Sex ratio:*

*Male: Female ratio : 10:4 <sup>(7)</sup>*

*Study reveals that rhinosporidiosis is more common in males. This could be attributed to bathing in common ponds being common in males. Males engaged in agriculture tend to bathe in near by ponds after their work. These very ponds are shared by cattle also.*

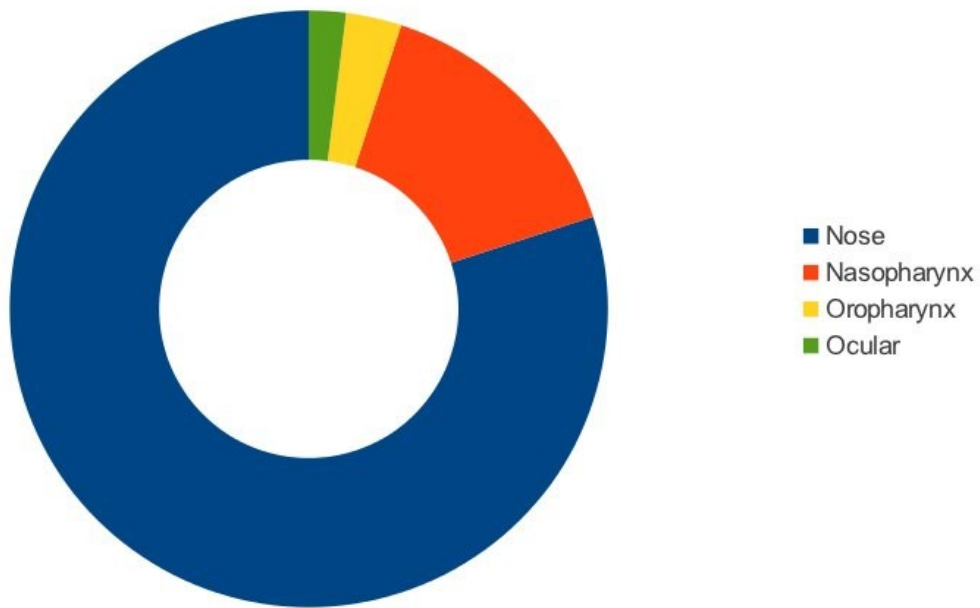


*Chart showing male:female ratio*

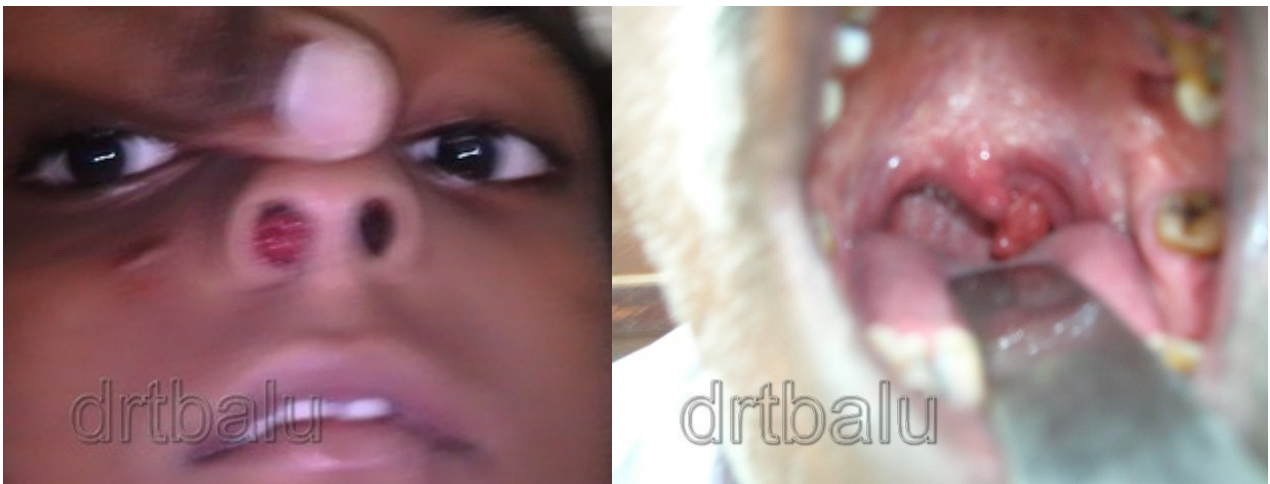
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*Common areas of involvement:*

- 1. Nose – 80%*
- 2. Nasopharynx – 15%*
- 3. Oropharynx – 3%*
- 4. Lacrimal sac / Nasolacrimal duct – 2%*

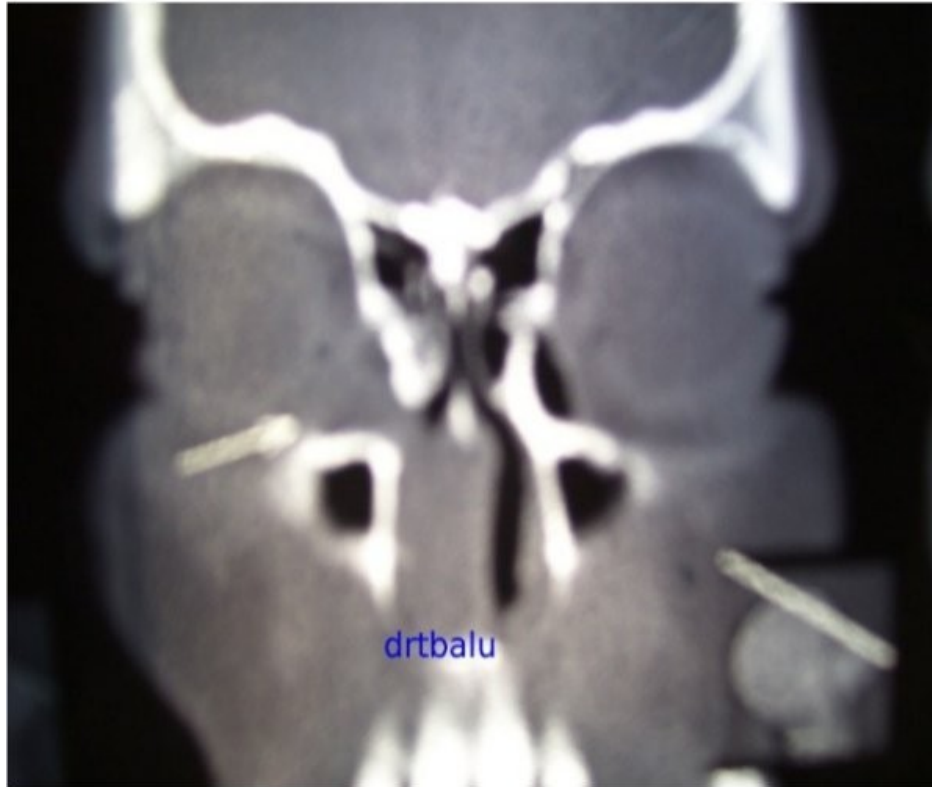


*Chart showing common areas involved in Rhinosporidiosis*



*Images showing Nasal and Nasopharyngeal rhinosporidiosis*



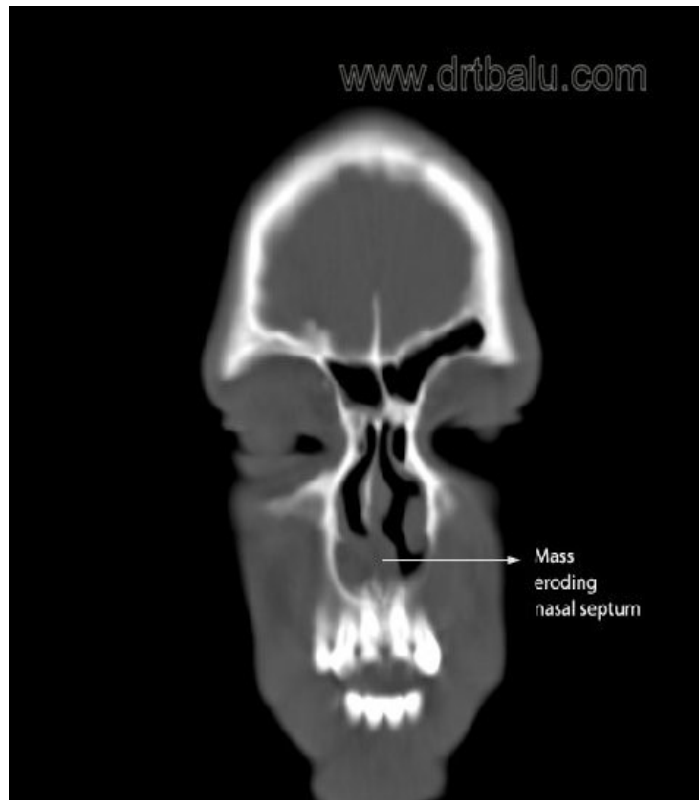


*Coronal CT nose and sinuses showing lacrimal sac and nasolacrimal duct rhinosporidiosis*

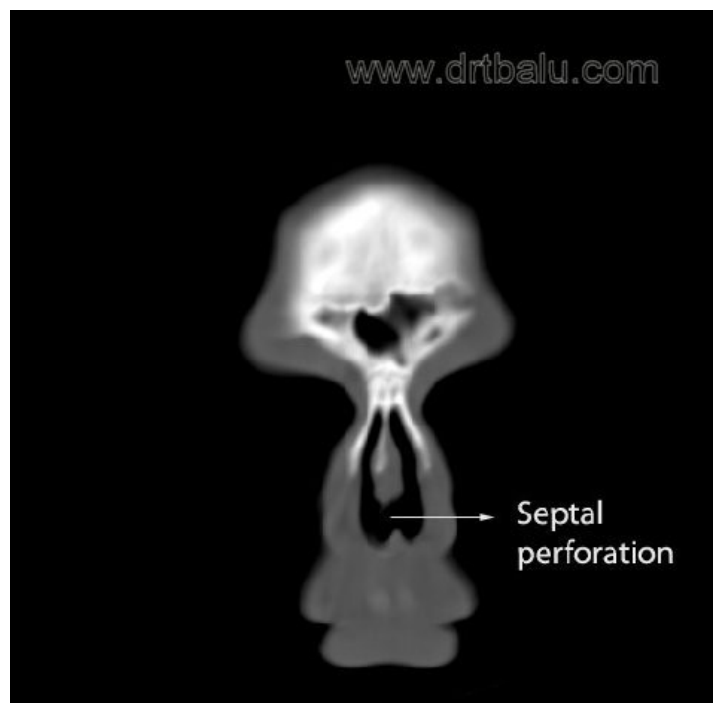
*All 200 patients involved in this study gave history of bathing in ponds. Pond irrigation is the commonest irrigation modality in this endemic district. <sup>(8)</sup>*

*Role of imaging in the diagnosis and management of rhinosporidiosis:*

*Imaging modality like CT scan of nose and paranasal sinuses reveal the exact site of attachment and extent of involvement. Evaluating anterior cuts are vital because during early stages of nasal rhinosporidiosis the lesion may be confined to the inferior meatus which could very easily be missed if only the posterior cuts are studied.*



*Rhinosporidial mass occupying the right inferior meatus*



*CT Nose and PNS showing septal perforation caused by rhinosporidiosis*

*Clinical features:*

*Commonly encountered clinical features include:*

*Epistaxis – Most common*

*Mass in the nasal cavity*

*Nasal block*

*Epiphora*

*One case manifested with septal perforation. Biopsy did not reveal any malignant transformation.*

*Eventhough nasal septum is resistant to erosion, it was seen to be eroded in one patient.*



*Endoscopic picture showing septal perforation in a patient with rhinosporidiosis*

*Management modality:*

*All these patients underwent surgical removal of the mass. 98% of these patients underwent endoscopic removal of the mass with cauterization of the base. Inferior turbinate resection was performed in 46 cases in order to facilitate complete removal of mass from inferior meatus. Pervia naturalis removal was performed in 4 patients who had extensive nasopharyngeal / oropharyngeal extension.*

*Post operative Dapsone therapy:*

*Dapsone <sup>(8)</sup> was used in all these patients as post op prophylaxis to prevent recurrence.*

*38 patients showed evidence of recurrence within the first two years after surgical extirpation of the mass.*

*Discussion:*

*This study clearly demonstrates that bathing in ponds could be a common etiological factor in all these patients. Male preponderance of this disease could be accounted for if the fact that lesser number of females prefer to bathe in common ponds due to factors like privacy.*

*Features of rhinosporidiosis:*

*The cardinal features of rhinosporidiosis are 1. chronicity, 2. recurrence and 3. dissemination.*

*The reasons for chronicity are :*

- 1. Antigen sequestration - The chitinous wall and thick cellulose inner wall surrounding the endospores is impervious to the exit of endosporal antigens from inside, and is also impermeable to immune destruction. However this sequestered antigen may be released after phagocytosis.*
- 2. Antigenic variation - Rhinosporidial spores express varying antigens thereby confusing the whole immune system of the body.*
- 3. Immune suppression - ? possible release of immuno suppressor agents*
- 4. Immune distraction - Studies of immune cell infiltration pattern have shown that immune cell infiltration has occurred in areas where there are no spores, suggesting that these infiltrates reached the area in response to free antigen released by the spores. This serves as a distraction.*
- 5. Immune deviation*
- 6. Binding of host immunoglobins*

*Conclusion:*

*The following probable conclusions were evolved from this study:*

- 1. Rhinosporidiosis is endemic in Kanyakumari district Tamilnadu India*
- 2. Common site of involvement was nasal cavity and nasopharynx*
- 3. One case manifested with septal perforation ? Cause needs to be evaluated.*
- 4. Dapsone therapy postoperatively was not successful in reducing recurrence rate in these patients*
- 5. Imaging played a vital role in providing road map to the surgeon because majority of lesions were removed endoscopically*

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*Medical therapy of rhinosporidiosis with dapsone*

Anand Joba<sup>1</sup>, Sarada Venkateswarana<sup>2</sup>, Minnie Mathana<sup>2</sup>, Hemalatha Krishnaswamia<sup>3</sup> and Rajagopal Ramana<sup>1</sup> *c1 The Journal of Laryngology & Otology* (1993), 107: 809-812



### *BIPP (Bismuth Iodine Paraffine Paste) Pack revisited*

*Dr T Balasubramanian Dr Leena Balachander*

#### *Abstract:*

*This review article takes a new look at the use of BIPP pack following nasal and ear surgeries. It lists the advantages and pitfalls of using this packing material. Pubmed search revealed very little material on this topic hence I compiled existing data to bring out an article.*

#### *Introduction:*

*Bismuth iodine paraffin paste is routinely used to pack nasal cavities. This was first used by James Morrison Rutherford Professor of surgery Durham 1 to dress first world war soldier's wounds.*

#### *BIPP Pack:*

*This is a sterile gauze (ribbon) impregnated with a paste containing<sup>2</sup>:*

- 1. one part bismuth subnitrate*
- 2. Two parts iodoform*
- 3. One part sterile liquid paraffin by weight*

#### *Role of Bismuth subnitrate:*

*It is a topical astringent and antiseptic. It is soluble in weak acid but insoluble in water and alcohol.*

*It contributes to the antibacterial properties of BIPP pack by releasing dilute nitric acid on hydrolysis.*

*Bismuth is not completely safe from complications<sup>3</sup>. It is considered to be less toxic than antimony and polonium. It has a half life of 5 days in the body but is known to remain in kidney for a long time. Bismuth can cause neurotoxicity because it is known to interfere with oxidative metabolism of brain. This complication is very rare when BIPP pack is used to pack the nasal cavity.*

*Symptoms of Bismuth toxicity:*

- 1. Head ache*
- 2. Nausea*
- 3. Stomatitis*
- 4. Bismuth line in the gingiva (Bismuth line)*

*Absorption of bismuth is more when packing is made on tissues that has already been injured.*

*Hence considerable amount of caution should be exercised before repeated nasal packing due to epistaxis.*

*Iodoform:*

*Its chemical name is triiodomethane.*

*This is another component of BIPP pack. It has a distinctive color and smell. It is insoluble in water and is highly soluble in chloroform / ether. Iodoform decomposes to release iodine which is an antiseptic. Iodine toxicity is common when BIPP packing is used to pack large wounds.*

*Paraffin:*

*Serves to lubricate the area packed. It minimizes trauma which could occur during packing.*

*Uses of BIPP Packs:*

- 1. Used to pack ears following surgery*
- 2. Used to pack nasal cavities after nasal surgeries*

*Bismuth is radio opaque. BIPP packs also contain a radio opaque marker strip which makes its identification easier when it is lost inside the cavities. Plain radiograph of the area is sufficient to identify the pack.*

*BIPP pack can be left in situ safely without fear of infection either in the ear or nasal cavity for a period up to 10 days<sup>4</sup>.*

*Contraindications for using BIPP Pack<sup>5</sup>:*

- 1. During pregnancy*
- 2. During states of Hypo / Hyperthyroidism*
- 3. Patients with known allergy to iodine*

### *Conclusion:*

*This article revisits the whole concept of BIPP packing. Eventhough it was commonly used to treat epistaxis during early 19th century, it fell into disrepute due to the reported incidence of complications and toxic reactions. This article attempts to throw light on the various aspects of BIPP packs, its use and contraindications.*

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### *Interesting case report of tooth inside nasal cavity*

*Dr T Balasubramanian Dr R Geetha*

#### *Abstract:*

*I am presenting an interesting case report of an ectopic eruption of teeth into left nasal cavity. Discussion is focussed on clinical, radiological presentation, probable etiology, diagnosis, management and complications.*

*Tooth inside nasal cavity is a rare form of supernumerary teeth which can be identified by performing CT scan.*

#### *Case Report:*

*35 years old female patient came to otolaryngology OPD with left sided nasal obstruction of one year duration and bleeding from the same side of 6 months duration. Nasal examination revealed whitish mass occupying the floor of left nasal cavity surrounded by granulation tissue. Probing revealed a gritty sensation. Granulation tissue started to bleed on probing.*

*Her intraoral dentition was normal. She gave no previous history of maxillo facial trauma / surgery in that area.*

*CT scan nose and paranasal sinuses coronal view revealed whitish mass located in the floor of the nasal cavity between the inferior turbinate and nasal septum. Its attenuation value was equal to that of teeth.*



*Image 1: Coronal CT nose and paranasal sinuses showing whitish mass in the floor of the left nasal cavity between inferior turbinate and nasal septum.*

*Management:*

*The mass was removed endoscopically. The mass was hard and resembled a tooth.*

*Histopathological study:*

*Revealed it to be a tooth composed of dentin and covered by a layer of poorly organized enamel.*



*Image II showing the supernumerary teeth after removal*

### *Discussion:*

*The incidence of supernumerary teeth affects roughly less than 1% of population. <sup>(1)</sup> The common area involved happens to be upper incisor which is also known as Mesiodens. In majority of cases these supernumerary teeth don't cause any problems. On rare occasions these teeth may cause symptoms like facial pain, nasal obstruction, headache, foul smelling nasal discharge, external deformities involving the nose and nasolacrimal duct obstruction.*

### *Theories of supernumerary teeth development:*

- 1. Supernumerary teeth may develop from the third tooth bed that arises from dental lamina near the permanent teeth bed or from splitting of permanent tooth bed itself. <sup>(1)</sup>*
- 2. This theory suggests that supernumerary teeth could be a reversion to the dentition of extinct primates which had three pairs of incisors. <sup>(1)</sup>*
- 3. Persistence of deciduous teeth / crowded dentition due to dense bone in the upper jaw may cause supernumerary teeth to develop.*
- 4. Displacement of teeth due to trauma / cyst may cause supernumerary teeth / ectopic teeth formation. <sup>(1)</sup>*

*Role of CT scan in these patients is to identify the presence or absence of tooth socket in the floor of the nasal cavity. If tooth cavity is present then it will make endoscopic removal of teeth rather difficult.*

*These supernumerary teeth can ideally be removed after permanent dentition eruption is completed to avoid injuring permanent dentition.*

### *Conclusion:*

*This case is presented for its rarity. Radiology helps not only in diagnosing this disorder but also in ascertaining the presence or absence of dental cavity in the floor of the nasal cavity which could cause difficulties in removing this mass endoscopically.*

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## *Versatility of Bicoronal flap approach in head and neck surgeries*

*Dr Leena Balachander Dr T Balasubramanian*

### *Abstract:*

*Bicoronal approach popularised by Tessier is one of the versatile approaches for skull and frontal region <sup>(1-6)</sup>. In this article we present our experience regarding Bicoronal flap approach in 3 different cases. Each patient had different pathologies in frontal region for which the same approach had been used. We also describe in detail about the incision, its indications and contra indications, advantages and disadvantages. Incision was made in hair bearing area. Hence post operatively, cosmetic results were appealing in all the patients <sup>9</sup>. It preserves the supraorbital neurovascular bundle, so complaints related to that are avoided. In this article, we discuss about the individual patient, merits and demerits of this particular approach in each patient.*

### *Brief Surgical Anatomy*

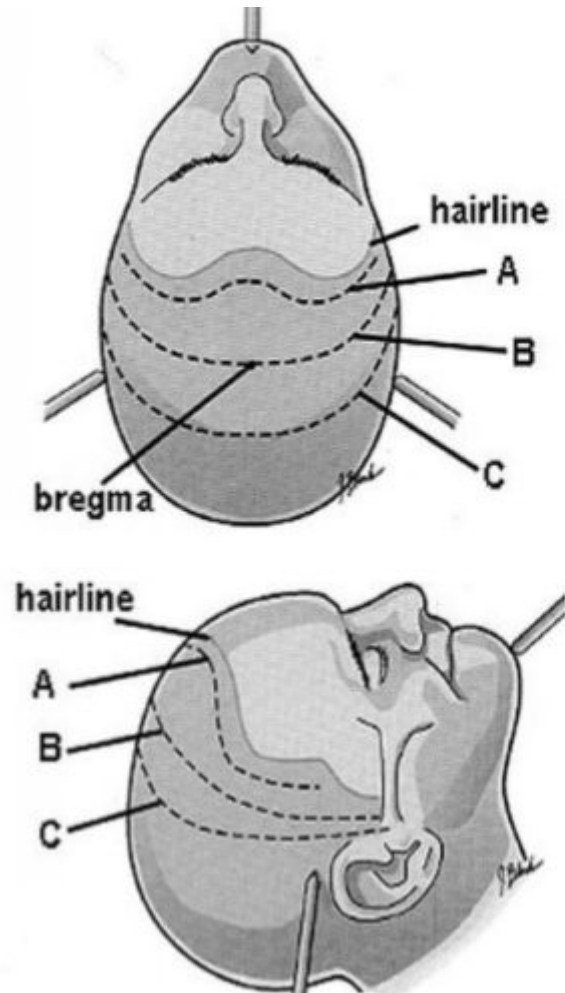
*The layers of the scalp include from superficial to deep: skin, subcutaneous tissue, galea or frontalis muscle, subgalealfascia, and the periosteum. Over the temporalismuscle, the layers of soft tissue are more complicated. Above the temporal line of fusion, which is at the level of the superior orbital rim the layers include: skin, subcutaneous tissue, temporoparietal fascia (facial nerve, and the superficial temporal artery run in this layer), deep temporal fascia, temporalis muscle, and periosteum. Below the temporal line of fusion the layers include: skin, subcutaneous tissue, temporoparietal fascia, superficial layer of the deep temporal fascia, temporal fat pad (middle temporal artery runs in this pad), deep layer of the deep temporal fascia, temporalis muscle, periosteum. For males, the emphasis appropriately focuses on the status of the hairline. In some cases of mild male pattern baldness, the incision may be placed posteriorly to hide it in the remaining hair. The patient should be aware that the incision may become visible if hairline recession continues. It must be ensured that the planned incision will afford adequate exposure for the planned procedure.*

### *Bicoronal incision:*

*It is an ideal incision for approach to upper one-third of facial skeleton and the anterior cranium. This extends from one temporal region to the other and involves a major*

*part of the scalp. For this incision, it is recommended to shave the hair for only a strip of 3-4 cms where the incision is to be made. The incision begins at the upper attachment of the helix on one side and extended transversely over the skull to the opposite side. This can be curved slightly forwards at the skull following but posterior to the hairline. The incision is often extended preauricularly to provide access to the zygomatic arches. Initially, the incision is made deep to sub-aponeurotic areolar tissue and the flap is raised along this plane, leaving the periosteum intact. Rarely*

*clips are applied to the edges of the flap to aid in hemostasis. The periosteum is incised about 3 cm above the supraorbital rim and then the dissection is carried out subperiosteally. This can be carried out until the nasoethmoid, nasofrontal and frontozygomatic region are exposed. The supraorbital neurovascular bundle is freed from the foramen by cutting them at the lower edge of the foramen.*



*The lateral and temporal dissection follows the outer surface of temporal fascia up-to approximately 2 cm above the zygomatic arch. At the point where the temporal fascia splits into two layers, an incision running at 45° upwards and forward is made through the superficial layer of temporal fascia. This incision is connected anteriorly with the lateral or posterior limb of supraorbital periosteal incision. Because the frontal branch of facial nerve courses obliquely 1.5 cms lateral to the eyebrow and not more than 2 cms above the brow, the connection between the fascia and the periosteal incisions should be at least 2 cms lateral and 3 cms above the eyebrow. The posterior extension of the temporal incision of the fascia is extended to cartilaginous auditory canal.*

*Once a plane of dissection is established deep to the superficial layer of temporal fascia, the dissection is continued inferiorly until the periosteum of the zygomatic arch is reached. The periosteum is incised and the zygoma, frontal bone, superior and lateral orbital margins, nasal bone and part of parietal and temporal bone are exposed.*

*When hemicoronal incision is planned, this incision will be stopped just short of midline.*

#### *Advantages :*

*Maximum exposure of upper one-third of facial skeleton and fronto-parietal region of cranium is exposed by this incision. This helps in management of*

- a) Extensive craniofacial trauma*
- b) Correction of craniofacial deformities*
- c) Single incision allows management of facial trauma and concomitant craniotomy if indicated*
- d) Good cosmetic result*
- e) Avoids injury to facial structures*
- f) Allows harvest and placement of cranial bone grafts*

#### *Disadvantages*

- a) Loss of hair due to injury to hair follicle in the incision line*
- b) Poor scar in case of male type baldness*
- c) Inadequate access to middle third of facial skeleton*
- d) excessive haemorrhage*
- e) Potential for damage of temporal branch of facial nerve resulting in weakness of frontalis muscle.*
- f) Post-operative hematoma due to wide dissection of scalp*
- g) Sensory disturbance, anaesthesia or paresthesia affecting supraorbital and preauricular region.*
- h) Trismus, ptosis and epiphora are also reported.*

*Various methods for hemostasis of bicoronal incisions are*

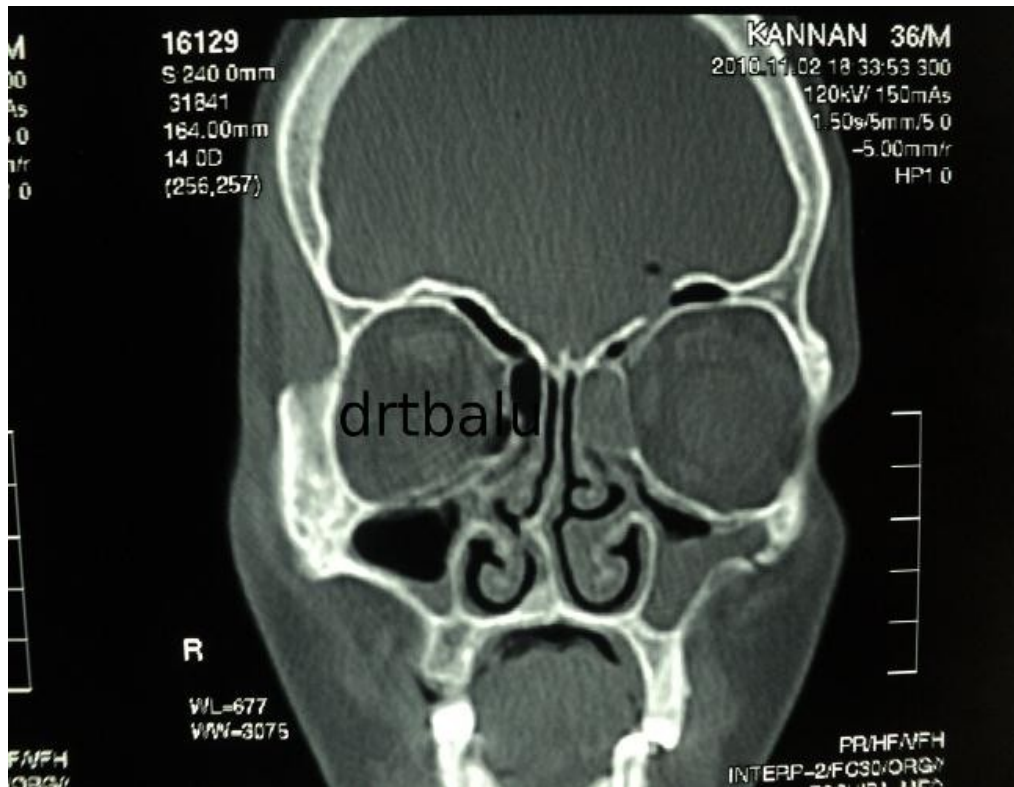
- a) Use of surgical clips*
- b) Cautery*
- c) Injection of lidocaine with epinephrine*

*Case report – 1:*

*This patient is a 30 years old male c/o watery nasal discharge for 3 years. Patient sustained injury by a road traffic accident before 3 years. 1 episode of meningitis + 2 years back.*

*History: Headache + on and off since then. On examination patient had watery discharge from left nose which got aggravated by bending forwards. CT – paranasal sinuses showed the presence of fracture in posterior table of frontal sinus with pneumatocele in left frontal lobe.*

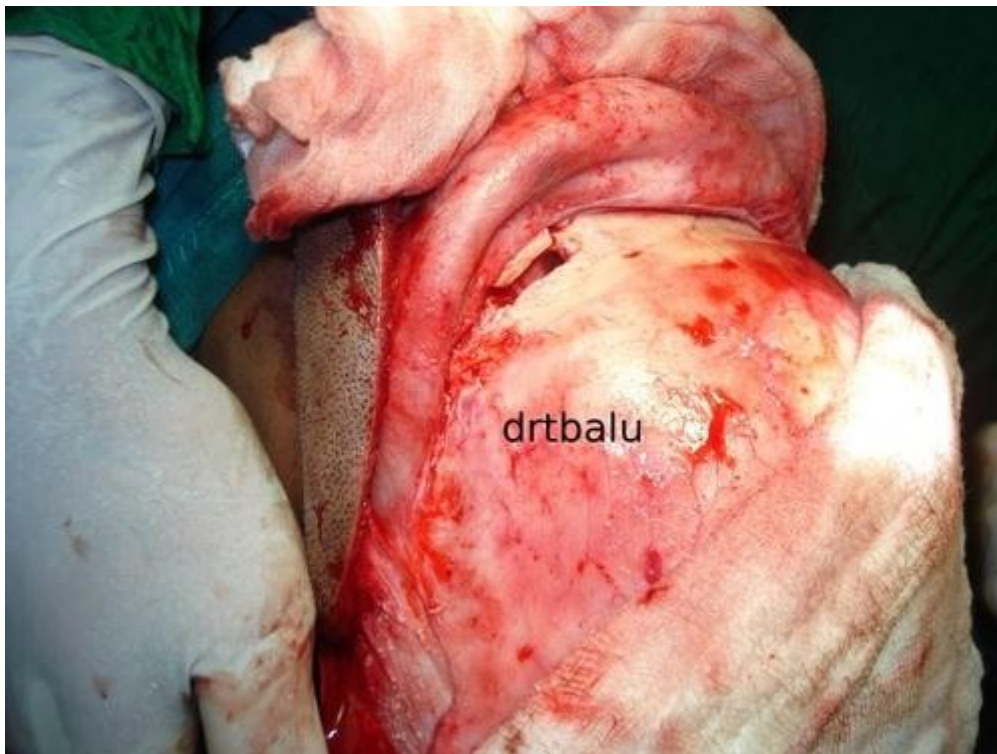




*Frontal sinus accessed through bicoronal incision, flap elevated till 2cm of supraorbital ridge. Periosteum was incised at this region and further dissection was done sub periosteally. Anterior table of frontal sinus was identified and the same opened using a fissure burr. Posterior table and the fracture in it was identified, fracture site sealed with tissue glue and abdominal fat.*





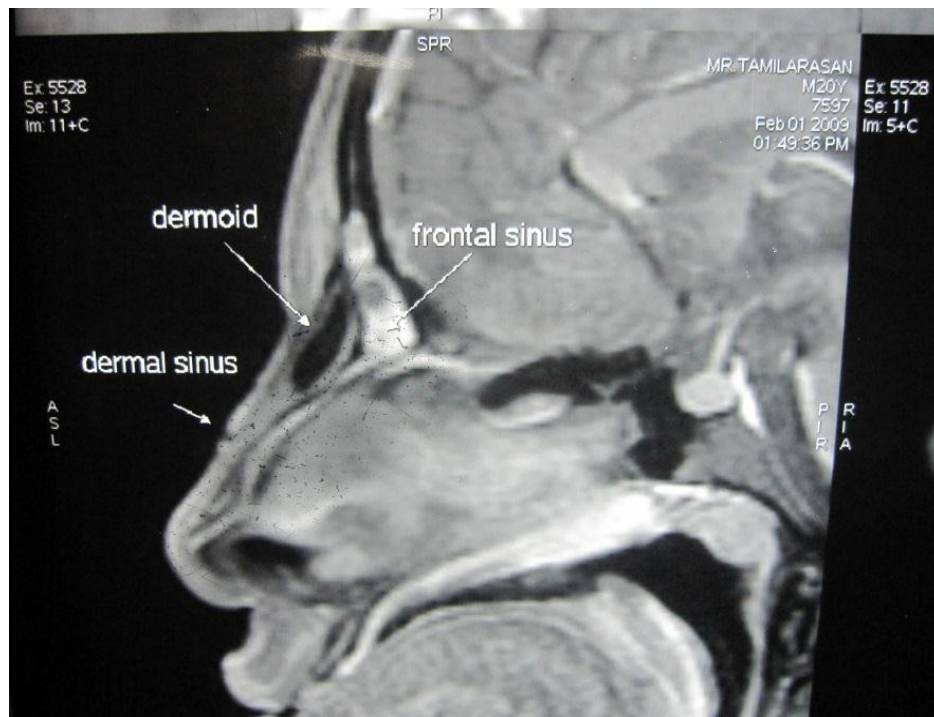


*Picture showing anterior table of frontal sinus exposed and bone flap elevated through bicoronal incision*

*Case report – 2:*

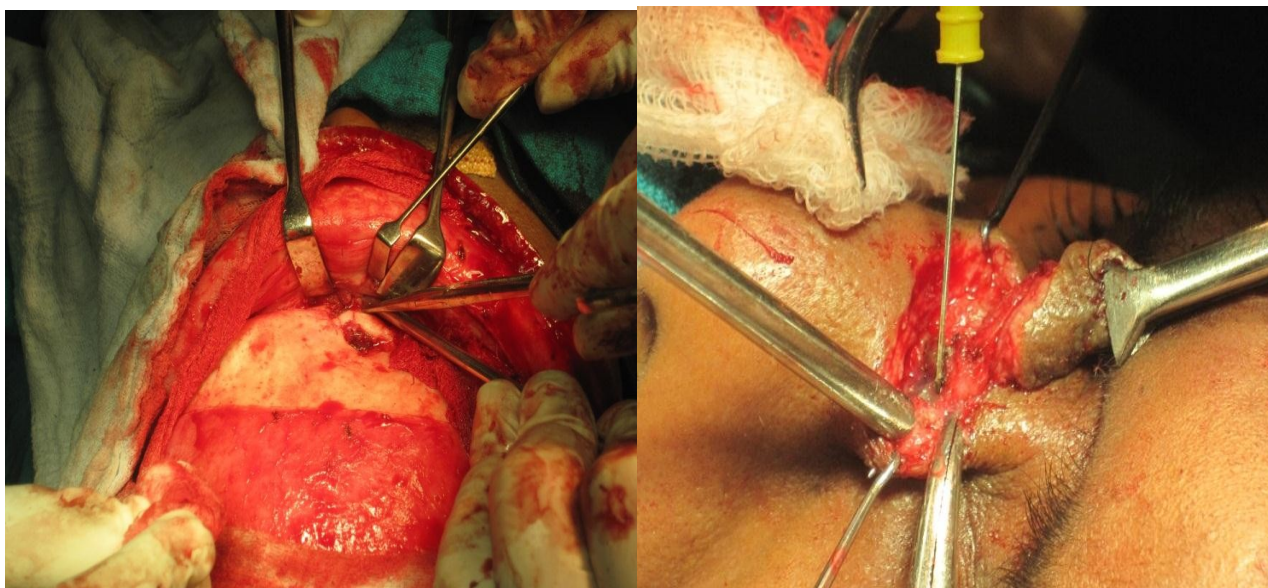
*This patient Is a 22 years old male who had history of nasal dermoid and osteomyelitis of frontal sinus which was communicating to exterior through a sinus tract in forehead , since childhood. He was operated twice for dermoid excision and removal of sequestrum . During previous surgeries, incision was made over eyebrow. This time patient came with complaints of discharge from sinus tract in forehead region.*

*MRI shows the presence of nasal dermoid which is connected through a tract to frontal sinus causing osteomyelitis of frontal sinus and which in turn connected to forehead through another sinus tract.*



*Excision of the dermoid with entire sinus tract and sequestrum through Bicoronal flap approach was planned*



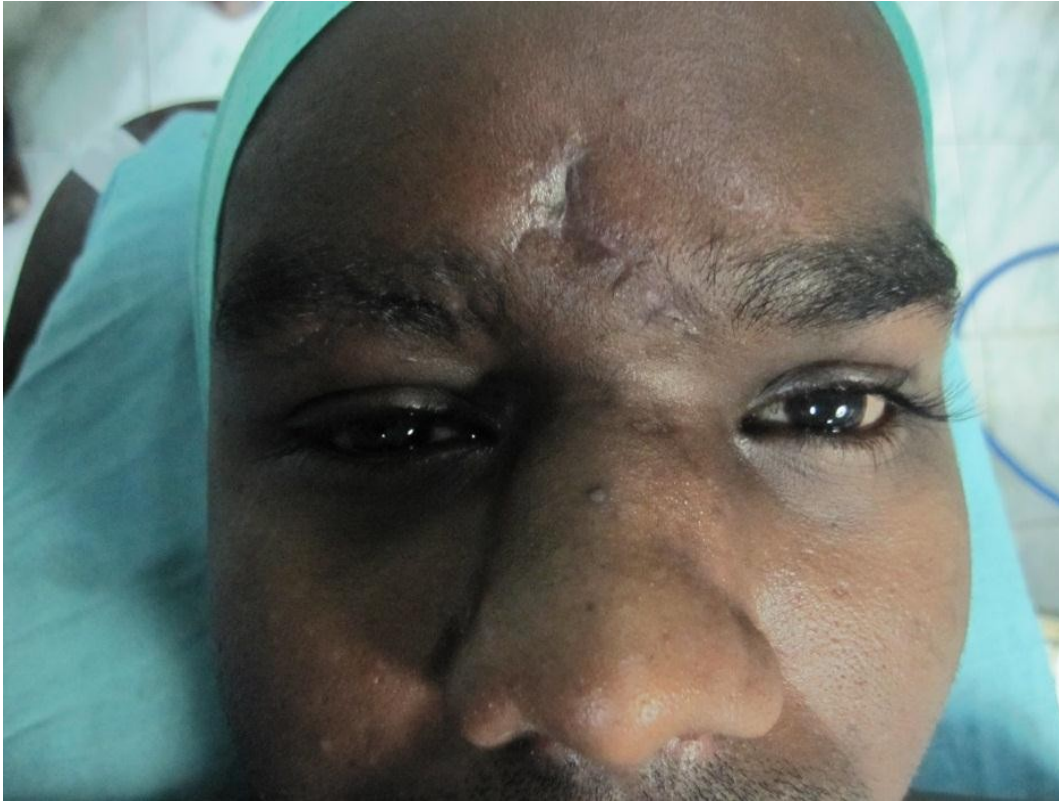


*Picture showing sequestrum from frontal sinus removed. Sinus tract over the dorsum of nose exposed*

*Complete removal of the entire sinus tract with dermoid and bone sequestrum was possible with this approach. Post operative period was uneventful. Patient was followed up for past 1 year and there was no evidence of recurrence till now.*

*Case report – 3 :*



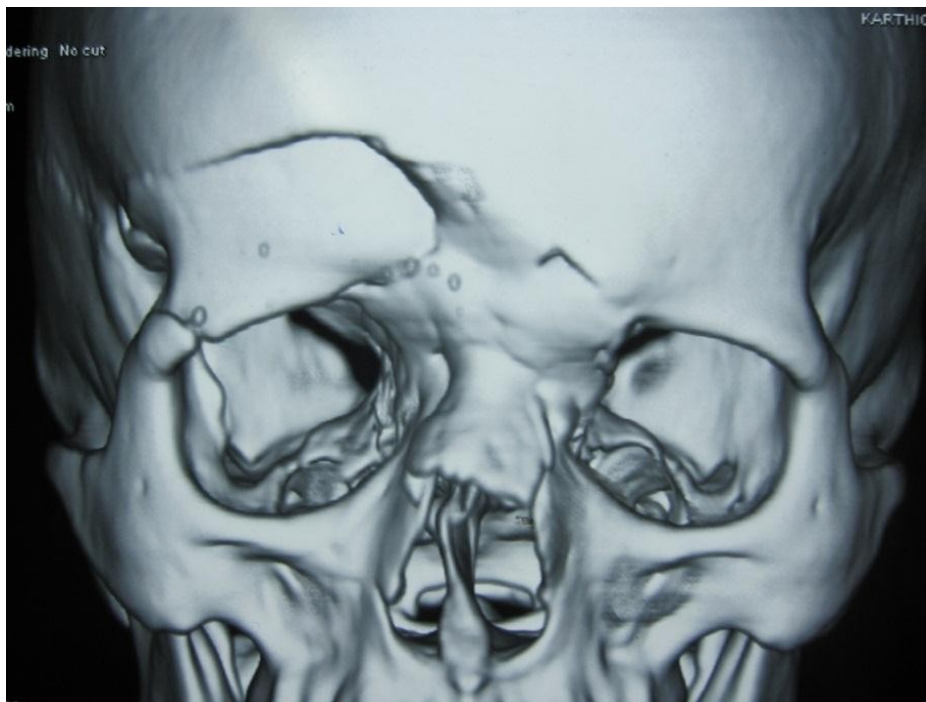


*23 year old male patient, who had RTA and sustained depressed fracture of anterior table of frontal sinus along with nasal bone fracture.*

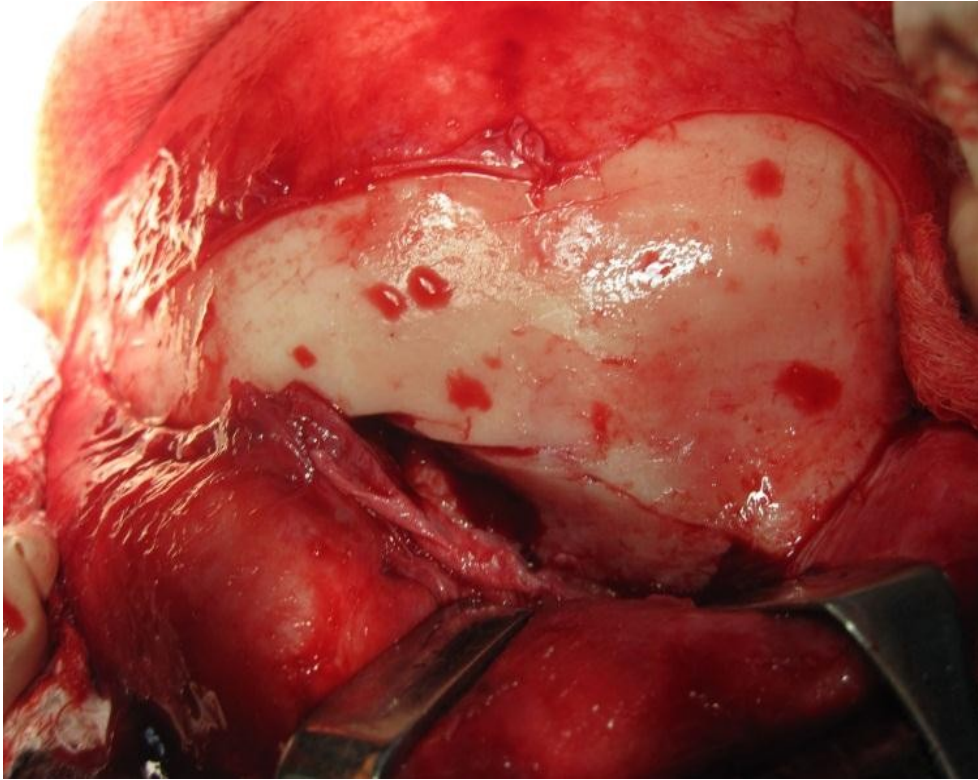




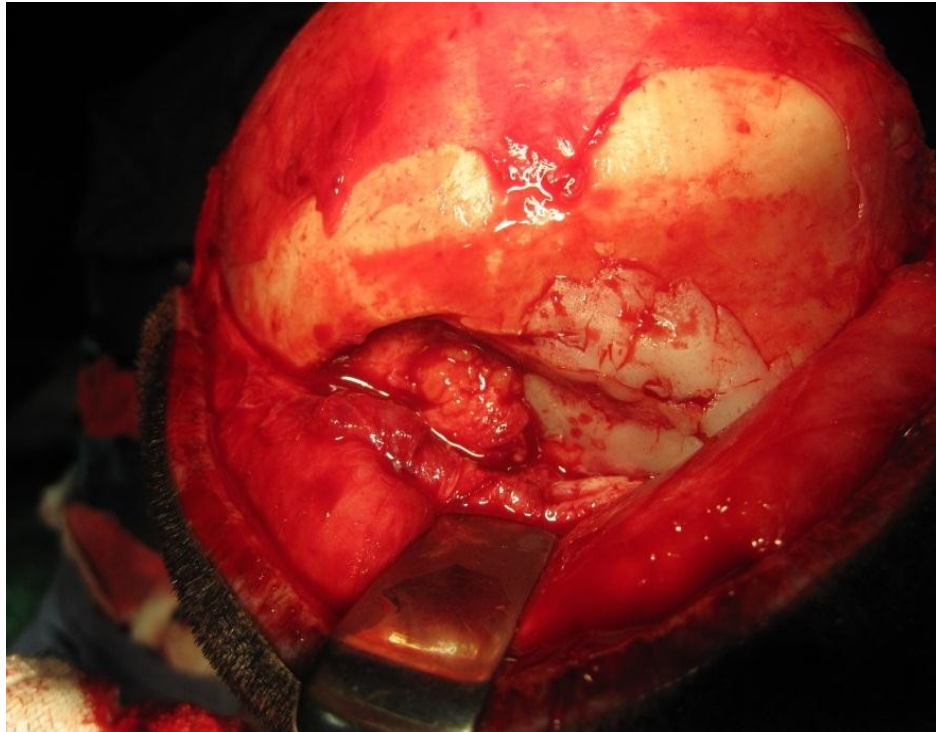
*CT shows the presence of fracture anterior wall of frontal sinus.*



*Reconstructed 3D image of skull*



*Picture showing fracture in frontal sinus*



*Picture showing the frontal sinus after reduction and placing the fat graft.*

### *Discussion:*

*In all the above mentioned cases, patients were having different pathology in frontal sinus, two of them involving nose also. For all these patients, bicoronal flap approach proved to be more efficient both in terms of access and exposure. There was minimal oedema in first post-operative period which in turn reduced in subsequent days. Even though in literature there were incidence of hair loss due to injury to hair follicles in the incision site 10, we never encountered this complication in our patients. After hair growth there was no evidence of scar and it was cosmetically very appealing.*

*For one particular patient (nasal dermoid with frontal osteomyelitis ) who underwent surgery thrice previously , this approach provided excellent exposure which enabled us to clear the disease process completely. There was no evidence of recurrence for past 1 year. Likewise Fractures of the frontal sinus are a relatively common injury presenting to trauma units that deal with craniofacial injuries.*

*Approximately one third of frontal sinus fractures affect the anterior wall alone, with two thirds involving the anterior wall, posterior wall, or frontonasal duct. Isolated posterior wall defects were exceedingly rare. Frontal sinus fracture management is still controversial and involves preserving function when feasible or obliterating the sinus and duct, depending on the fracture pattern. In the standard treatment modality of frontal sinus fractures, repair is best performed by way of a coronal approach, which offers excellent access <sup>20</sup>. Most of the frontal sinus fractures deserve this attentive surgical manipulation to prevent late sequelae of infection or mucocele formation. Thus for our patient, this was the ideal approach for accessing posterior wall of frontal sinus with CSF leak.*

*This one approach gives better access to all structures in mid facial region.*

### *Conclusion:*

*The Bicoronal flap is a well-recognised technique for accessing mid facial region. Although the procedure seems to be extensive, it has very less morbidity compared to other procedures to gain access to entire mid facial region. We have attempted this article to review the indication, merits and probable complications of this approach with a brief description about anatomy and the technique as such.*



**MANDIBULAR SWING APPROACH FOR A RECURRENT PARA  
PHARYNGEAL SPACE  
TUMOR – REPORT OF A CASE.**

**Karthika A      Balasubramanian T**

**ABSTRACT**

*Para pharyngeal space tumors , most of them benign, account for some 0.5% of tumors of head & neck. The importance of these tumors lie mainly in two aspects- on the one hand, the difficulty of early diagnosis & on the other hand the extreme complications of performing surgery in Para pharyngeal region.*

*This article discusses a clinical case of recurrent parapharyngeal tumor. A 32 yr old man presented with a recurrent left side neck swelling, 4cm in diameter, which was subsequently confirmed as schwannoma by FNAC. Para pharyngeal tumor was successfully removed by mandibular swing approach & excision technique. His post operative course was uneventful & the pre operative clinical symptoms such as dysphagia & dyspnea completely resolved after surgery.*

**Introduction:**

*Parapharyngeal space (PPS) tumours are not very frequent, accounting for some 0.5% of neoplasms of the head and neck. Most of these tumours (70-80%) are benign and 40-50% of the total originate in the salivary glands, particularly the pleomorphic adenoma<sup>1</sup>.*

*The PPS is in the shape of an inverted pyramid, going from the base of the skull to the hyoid bone, up to the petro tympanic part of the temporal lobe. The back wall is delineated by the aponeurosis and the C1, C2 and C3 pre vertebral muscles. It is delimited medially by the pharyngobasilar fascia and the superior pharyngeal constrictor muscle, and laterally by the ascending branch of the jaw, superficial cervical aponeurosis and the submaxillary gland. The styloid diaphragm, an aponeurotic sheath originating in the styloid apophysis is located on a plane inclined from above to below and from back to front, dividing the PPS into two compartments: the pre-styloid compartment occupied mainly by the parotid gland deep lobe, and the retro-styloid compartment, containing the internal carotid artery, internal jugular vein, cervical sympathetic chain and the last four pairs of cranial nerves<sup>2</sup>.*

*PPS tumours may remain undetected for long periods of time, and generally present anodyne symptoms, normally as asymptomatic lumps medially displacing oropharyngeal structures. Other symptoms observed include the feeling of having a foreign body, obstruction of tubes, changes in the voice and cervical mass. Pain along with lock-jaw and/or paralysis of any of the pairs of cranial nerves would suggest malignancy<sup>3</sup>.*

*Because of its anatomical complexity, complementary MR and CT scanning are necessary for diagnosis, and Fine Needle Aspiration Cytology (FNAC) is very specific in the histological diagnosis of these tumours. Open biopsy is not advised, due to the risk of bleeding, opening of the capsule and, accordingly, relapse and seeding to neighbouring tissues<sup>4</sup>.*

*Because of the difficulty involved in getting into the PPS, many different approaches have been described, including transcervical, the first approach, described by Morfit in 1955<sup>1,5</sup>; transcervical-transparotid, the most widely used, helpful in PPS tumours originating in the parotid*

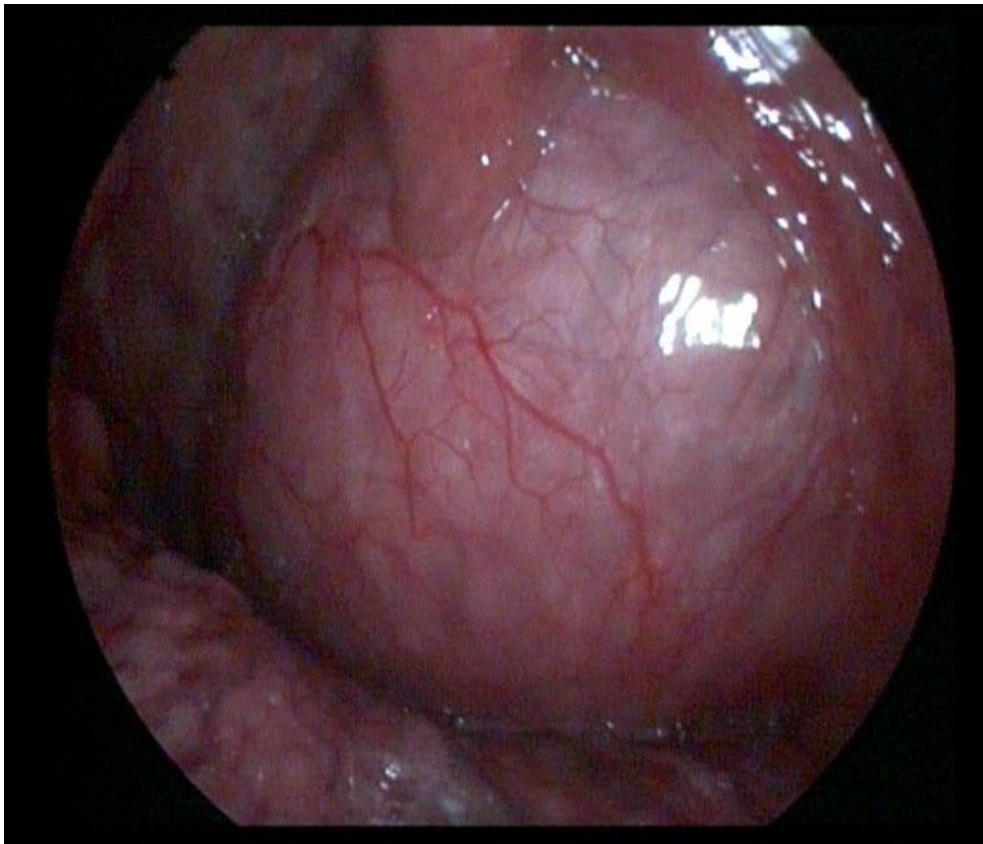
*deep lobe; transpalatal or transoral, described by Ehrlich<sup>6</sup> and limited to small non-vascular tumours; transmandibular, mandibular osteotomy being described as a complement to the other approaches, in order to improve and increase access to the PPS; Ariel et al<sup>7</sup> were the first to propose opening the jaw to enter the PPS, many variations being later described<sup>8</sup>; and, lastly, the orbitozygomatic approach to the middle cranial fossa, described in detail by Fisch<sup>9</sup> in 1978, to give access to PPS tumours affecting the temporal bone or very large tumours reaching the base of the skull.*

*In order to treat these kind of tumours correctly, it is first necessary to select the right surgical approach for each case, balancing maximum exposition, for complete and safe removal of the tumour with minimum aesthetic and functional morbidity.*

## **CLINICAL CASE :**

*Male ,32 yrs of age, presented with dysphagia & left sided recurrent neck swelling. Physical examination of oral cavity showed smooth bulge predominantly over left posterior pharyngeal & lateral pharyngeal wall, Fig (1). Neck examination revealed diffuse firm swelling of 4cm diameter with surgical scar over which in the left posterior triangle of neck. Previous surgical details unavailable except HPE report as Schwannoma.*





*FIG(1) shows smooth bulge in the oropharynx .*

#### ***SURGICAL TECHNIQUE:***

##### ***MANDIBULAR SWING APPROACH & EXCISION OF TUMOR.***

*This procedure performed under general anaesthesia. We did preliminary tracheostomy & ET intubation performed via the tracheostome & the tube anchored to the chest.*

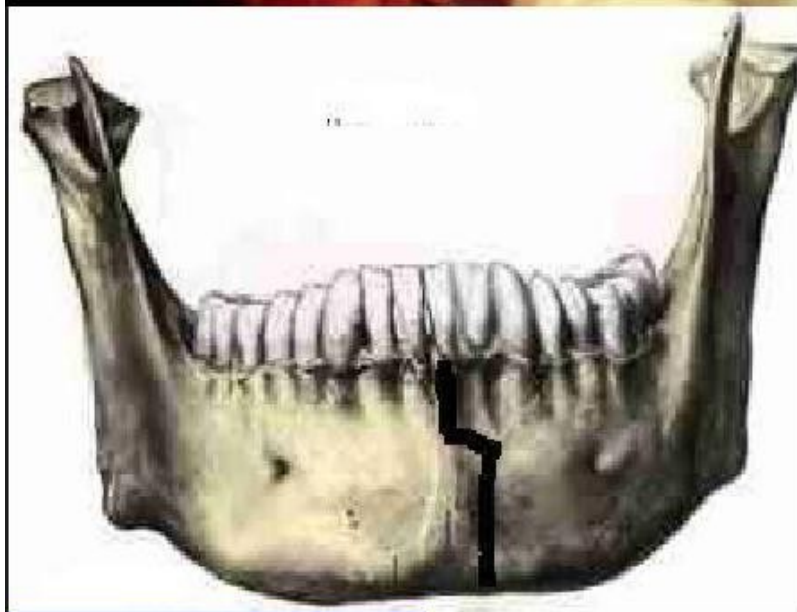
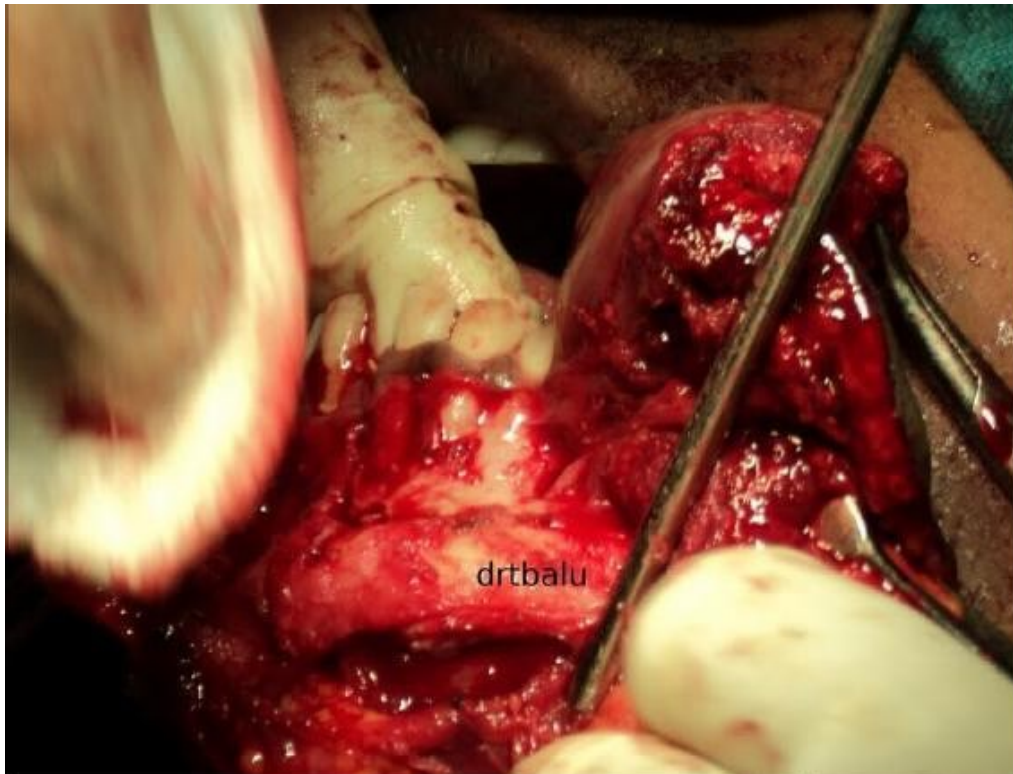
*Naso gastric tube introduced. We started incision from the Vermilion border of lower lip directly extending down to the Chin. From just below the chin the incision takes a gentle lateral Curve at the level of hyoid bone up to the medial border of sternocleidomastoid muscle fig(1). We divided lower lip up to its full thickness. Neck dissection carried out in the sub platysmal plane. Deep cervical fascia enveloping sub mandibular gland incised. Mandibular periosteum elevated on both sides. Mandibular osteotomy performed using a fissure burr fig(2). Incision continued in the para lingual gutter extending up to the anterior pillar fig(3) with adequate cuff left in the para lingual area. Identified wharton's duct , dissected & reflected it along with the swung mandible. Pharyngeal part of swelling visualized fig(4).*

*vertical incision made over the swelling. By finger dissection , we excised the tumor. Finally mandibular segments stabilized with screws fig(5) . Soft tissues approximated using absorbable suture. Post operatively, we decannulated the tracheostome & passed without incident . Patient was reviewed 2 weeks, 1 month later & the preoperative symptoms such as dysphagia , dysphnea completely resolved without any complications.*

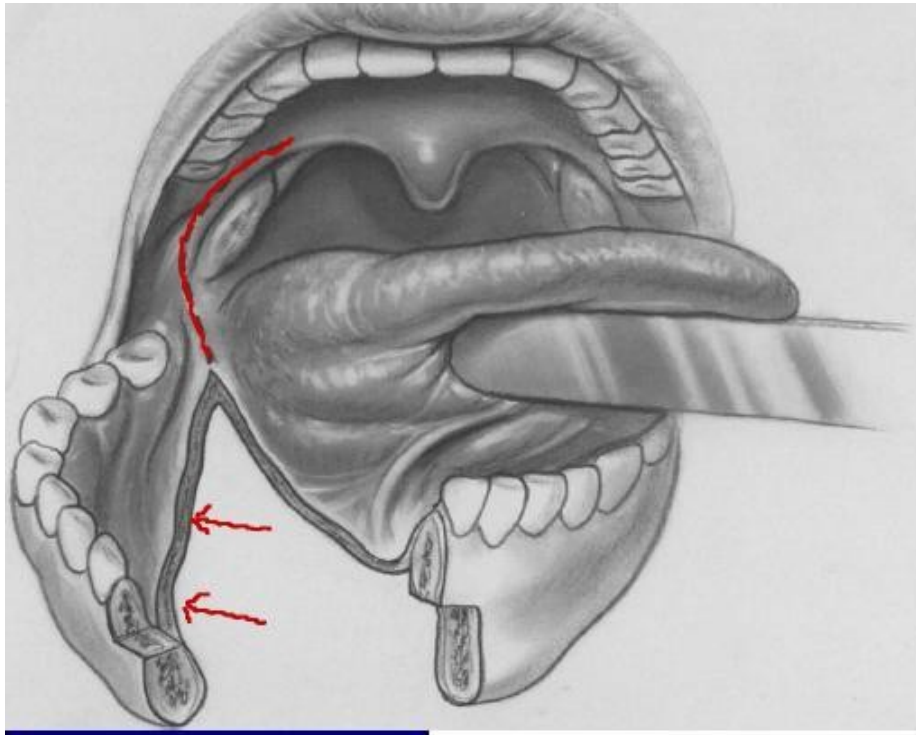


*Fig 1 showing the incision*

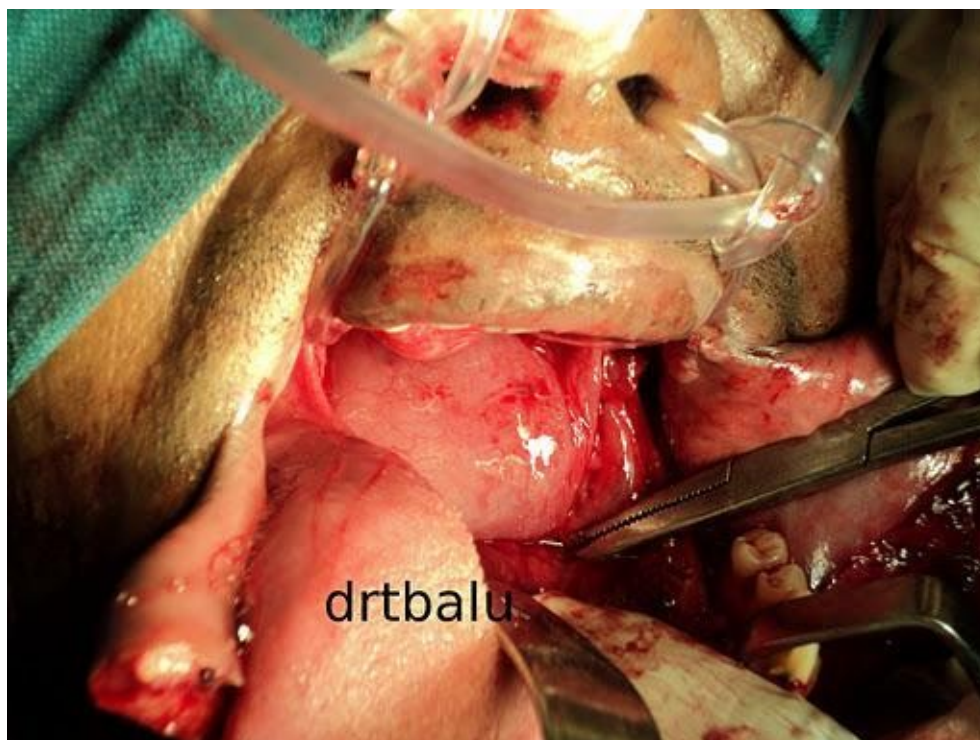
*Figure 2 showing mandibular osteotomy*



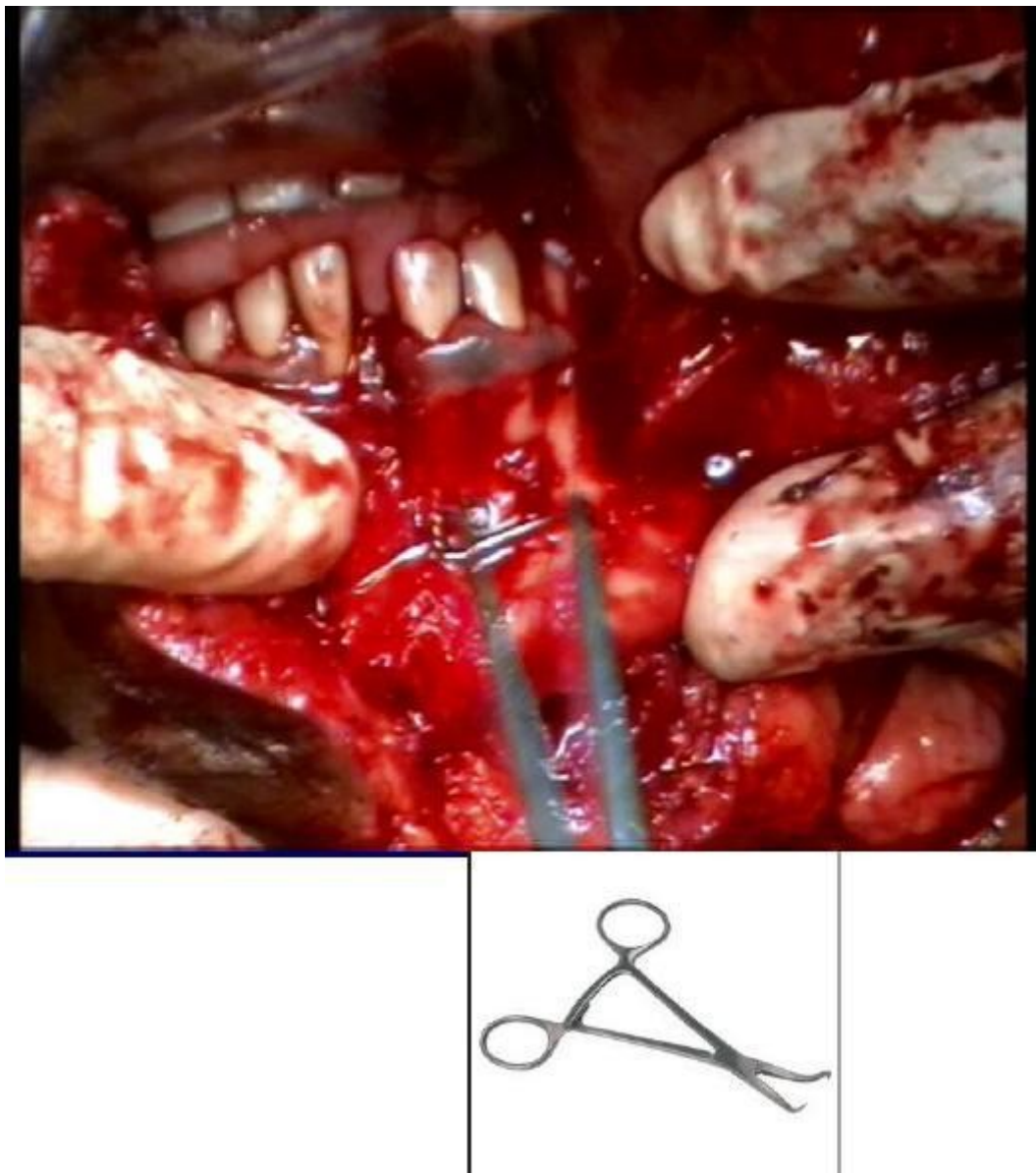




*Figure 3 showing intraoral incision*



*Figure 4 showing mass after mandibular swing is complete*



*Figure 5 showing mandible after stablisation*

#### **DISCUSSION:**

*PPS tumours usually present very few symptoms and are often associated with dysphagia, dyspnoea, obstructive sleep apnoea syndrome, cranial nerve deficits, Horner's syndrome, pain, hoarseness, dysarthria and trismus. Sometimes, a neck mass is present but it is often discovered only during a routine physical examination. Intraorally, they commonly appear as a smooth submucosal mass displacing the lateral pharyngeal wall, tonsil and soft palate antero-medially and it is often misdiagnosed as an infection or a tonsil tumour. In addition, the space itself is clinically inaccessible since it is surrounded by the mastication muscles, the mandible, and parotid glands which makes physical examination of the tumour difficult. In these cases, a bimanual evaluation is the most effective clinical examination although tumours of < 2.5 cm are undetectable<sup>10</sup>.*

*Imaging studies are used to predict the origin, side and the size of parapharyngeal tumours. MRI with gadolinium, is better than a CT scan and is the examination of choice. It can reliably Imaging studies are used to predict the origin, side and the size of parapharyngeal tumours. MRI with gadolinium, is better than a CT scan and is the examination of choice. It can reliably areas and are reported in the literature as 80% benign and 20% malignant .The several kinds of mandibular osteotomy described in the literature give excellent access to the PPS, being very useful for the complete excision of tumours and allowing better control of the vascular structures. Since the first osteotomies were described by Ariel et al.<sup>11</sup> , several variants<sup>12</sup> have been described..Another possible variant is osteotomy at the level of the condyle or, more recently, vertical osteotomy of the mandibular branch<sup>13</sup> to facilitate greater mobilisation of the corresponding segment of the mandible. In short, the success of PS surgery depends on two conditions: correct identification and exposition of the lesion, allowing for complete removal; and minimum functional and aesthetic morbidity as a consequence of the surgery. Most patients may benefit from a simple transcervical or transparotid approach, but a group of patients with larger tumours require the use of techniques which, while simple, in combination may widen the surgical field without necessarily increasing morbidity. It is, accordingly, necessary to use all available surgical resources, adapting the chosen approach to the characteristics of the lesion.*

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